

**COSMOPHORUS CAPEKI N. SP., FROM NEW YORK
(HYMENOPTERA: BRACONIDAE: EUPHORINAE)**

C. C. LOAN

Research Institute, Canada Department of Agriculture,
Belleville, Ontario, Canada¹

ROBERT MATTHEWS

Department of Entomology, University of Georgia, Athens, Georgia 30601

ABSTRACT—*Cosmophorus capeki*, n. sp., is the fifth known Nearctic species of *Cosmophorus* Ratzeburg. It is a parasite of the scolytid *Pityophthorus rhois* Swaine breeding in *Rhus typhina* L.

Species of *Cosmophorus* Ratzeburg 1848 are rare braconids parasitic on adult scolytids (Coleoptera). *C. capeki* new species was reared and host-associated by the second author in 1967 during a biological survey of Huyck Preserve near Rensselaerville, N. Y. It is the fifth known Nearctic species of *Cosmophorus*. Following Capek (1970) and Tobias (1971), the subfamily Cosmophorinae is not recognized and *Cosmophorus* is placed in the Euphorinae chiefly on ethological and larval characters.

The holotype of *C. capeki* is deposited in the U. S. National Museum, Washington, D. C. (USNM).

Cosmophorus capeki, n. sp.
fig. 1-3

Holotype: Female. Length about 1.9 mm excluding antennae and ovipositor sheaths. Piceous. Flagellar segment 1 pale, succeeding segments dusky, scape and pedicel not as dark as flagellar segments 2-12 but darker than 1; mandibles (except apices) and face reddish brown; front wing venation pale grey; femur and tibia of each leg deeply infuscated. Head about 1.4 times as wide as long, 1.2 times as wide as thorax; eye not much longer than wide, its length to width of face between eyes 1:1.6; ocular-ocellar line = basal width of mandible, slightly more than 2.0 times as long as postocellar line; flagellum 12-segmented (fig. 3), about 2.0 times as long as head width, 1+2 only slightly more than combined length of pedicel +1. Mesonotum smooth, polished, apparently glabrous from above but in side view bearing very short, widely-spaced setae; mesepisternum generally rounded and smooth medially, thickly punctulate above and below. Stigma (fig. 1) 3 times as long as wide, inner side somewhat longer than outer; radial cell measured on wing margin 0.7 times as long as stigma, second abscissa of radius almost complete to wing margin; first abscissa of radius short but distinct. Hind wing as in fig. 2. Tibia of hind leg 0.36 mm long, 3 times as long as hind

¹ Present address: Entomology Research Institute, Canada Department of Agriculture, Ottawa, Ontario, Canada.

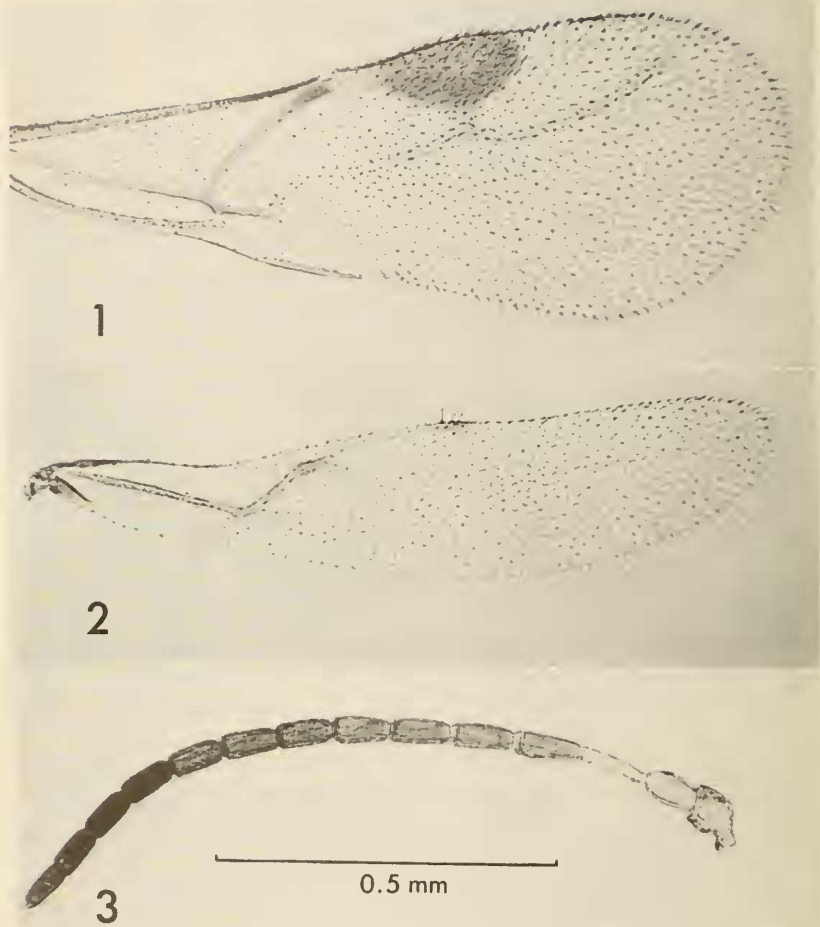


Fig. 1-3. *Cosmophorus capeki* new species. 1, front wing. 2, hind wing. 3, antenna of female.

tarsal segment 1. Tergite 1 of gaster 1.4 times as long as wide at apex (length measured from spiracles to apex), dorsum evenly granulose; ovipositor sheaths about as long as thorax and propodeum combined, 2.4 times as long as tergite 1.

Males and females: In the type series, the antennal flagellum is 11-segmented in males, and 12-segmented in females. Color variation of basal antennal segments: scape and pedicel of some male and female specimens are as dark as flagellar segment 2 or as pale as segment 1, or pedicel is pale and scape dark; flagellar segment 1 of female pale in all specimens whereas that of male may be pale only at base.

No significant sexual differences were found for the dimensions of the eye, width of face, dimensions of the stigma, length of the hind tibia, nor width of the apex of tergite 1 of the gaster (student's *t* test for unpaired data).

Dimensions (mm) of some body structures of *C. capeki* (means and standard errors) are as follows:

	Eye		Face Width
	Length	Width	
♂, ♀ N = 20	0.15 ± 0.099	0.12 ± 0.010	0.23 ± 0.012
Tergite 1 Apex Width	Hind Tibia Length		Ovipositor Sheaths L.
0.16 ± 0.12	0.37 ± 0.12	N = 15	0.57 ± 0.025

Type: Holotype: ♀, United States. New York, Albany Co., near Rensselaerville, Huyck Preserve, VIII.3, 1967 reared ex *Pityophthorus rhois* Swaine in *Rhus typhina* L. (R. & J. Matthews). Type deposited in USNM (USNM No. 72154).

Paratypes: 15 ♀♀, 19 ♂♂, same data as type but reared from VIII-2-18, 1967. 3 ♀♀, 3 ♂♂ British Museum (Natural History), London; 5 ♀♀, 5 ♂♂ Canadian National Collection, Ottawa; 1 ♀, 1 ♂ Forest Research Institute, Banská Štiavnica, ČSSR; all others in USNM.

DIAGNOSIS OF *C. capeki* AND KEY TO RELATED NEARCTIC SPECIES

C. capeki is characterized by a narrow apex of tergite 1, black body, and deeply infuscated legs. Characters for the 4 other species included in the following key are based on a study of the types of each species.

1. Flagellum 11-segmented (♂), 12-segmented (♀) 2
- Flagellum 13-segmented (♂), 14-segmented (♀) 4
2. Tergite 1 of gaster 1.8 times as wide at apex as eye length; flagellum light reddish brown with all segments more or less concolorous; legs greyish yellow; hind tibia 0.51 mm long *Cosmophorus pityophthori* Ashmead
- Tergite 1 1.0–1.3 times as wide at apex as eye length; flagellum dark reddish brown or piceous, segment 1 pale; hind tibia not over 0.41 mm long 3
3. Head, thorax, abdomen light reddish brown, legs light testaceous *Cosmophorus hypothenemi* Brues
- Head, thorax, abdomen black; legs deeply infuscated *Cosmophorus capeki* n. sp.
4. Flagellar segments 1–5 distinctly yellow, succeeding segments dusky *Cosmophorus dendroctoni* Viereck
- Flagellar segments 1–2 yellow, 3 yellow basally, succeeding segments dusky *Cosmophorus hopkinsii* Ashmead

Biology: The main details of *Cosmophorous* biology were reported by Seitner and Notzl (1925) for *C. henscheli* Ruschka, the only species

to be comparatively well studied. Wasps enter host galleries and seize adult beetles in their jaws and oviposit into their thoraces.

Comments: *Cosmophorus capeki* emerged from branches (25 mm diameter or less) of red sumac (*Rhus typhina* L.) heavily infested by the bark beetle *Pityophthorus rhois* Swaine. Branches collected and placed in rearing containers on 5 July 1967 were maintained at room temperature until 12 September 1967; beetles and parasites that emerged were removed daily. There were 51 male- and 76 female-reared parasites, the first emerging on 29 July, then daily until 18 August. Examination of the branches from which the wasps emerged failed to reveal any parasite exit holes suggesting that *Cosmophorus* emerges via the entrance galleries of the host scolytid. This is interesting as most braconids parasitic on bark beetles chew out through the bark overlying their host. Adult parasites provided with soaked raisins and kept in plastic containers survived up to 3 weeks. However, attempts to obtain life history data by inducing parasitism of beetles in other heavily infested sumac stems were unsuccessful.

This species is named for Dr. Miroslav Čapek, Forest Research Institute, VS Banská Štiavnica, ČSSR.

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REFERENCES

- Čapek, M. 1970. A new classification of the Braconidae (Hymenoptera) based on the cephalic structure of the final instar larva and biological evidence. *Can. Entomol.* 102:846-875.
- Hedqvist, K.-J. 1955. Studien über Braconiden. I. Revision der Gattung *Cosmophorus* Ratz. *Entomol. ts. Arg.* 76:92-98.
- Seitner, M., and P. Nötzl. 1925. *Pityophthorus henscheli* Seitner und sein Parasit *Cosmophorus henscheli* Ruschka. *Zeit. angew. Entomol.* 11:187-196.
- Tobias, V. I. 1971. Review of the Braconidae (Hymenoptera) of the USSR. In *Trudy russk. éntomol. Obsheh.* 54:156-268. (In Russian)